

SYSTEM AND METHOD FOR PRE-CHARGING THE DC BUS OF A UTILITY CONNECTED POWER CONVERTER

Abstract

A system and method for pre-charging the DC bus of a utility connected power converter. In one embodiment, a full-wave rectifier circuit is coupled to the utility grid through an isolation transformer and circuit protector. The rectifier circuit output is connected to the DC bus of the power converter to provide a pre-charging current to the DC bus capacitors. The output from the rectifier circuit also supplies power to the control circuit power supply for the converter. When the control circuit closes the contactor of the converter system and activates the converter, the voltage across the DC bus capacitors is increased above the level of the rectified power grid voltage provided at the output of the pre-charge circuit. This reverse-biases the rectifier diodes, placing the pre-charge circuit into an inactive state. The impedance of the isolation transformer limits the in-rush current into the DC bus capacitors during the pre-charge.